he had limited himself to indicating four grades of mean annual humidity, the upper limits of which were respectively 50 per cent. (very dry), 65 per cent., 80 per cent., and 100 per cent., (very damp). The relative humidity over the oceans might exceed 80 per cent., but in certain regions ("horse latitudes") it was certainly much less, and in a portion of the Southern Pacific it seemed not to exceed 65 per cent. One chart exhibited the Annual Range of Humidity, viz. the difference between the driest and the dampest months of the year. In Britain, as in many other parts of the world, where the moderating influence of the ocean was allowed free scope, this difference did not exceed 16 per cent., but in the interior of the continents it occasionally exceeded 45 per cent., spring or summer being exceedingly dry, whilst the winter was excessively damp, as at Yarkand, where a humidity of 30 per cent. in May contrasted strikingly with a humidity of 84 per cent. in December. This great range directed attention to the influence of temperature (and of altitude) upon the amount of relative humidity, for during temperate weather we were able to bear a great humidity with equanimity, whilst the same degree of humidity, accompanied by great heat, may prove disastrous to men and beasts. Hence, combining humidity and temperature, the author suggested mapping out the Earth according to sixteen *hygrothermal types*, as follows:—(1) Hot (temperature 73° and over) and very damp (humidity 81 per cent. or more): Batavia, Camaroons, Mombasa. (2) Hot and moderately damp (66–80 per cent.): Havana, Calcutta. (3) Hot and dry (51–65 per cent.): Bagdad, Lahore, Khartum. (4) Hot and very dry (50 per cent. or less): Disa, Wadi Halfa, Kuka. (5) Warm (temperature 58° to 72°) and very damp: Walvisch Bay, Arica. (6) Warm and moderately damp: Lisbon, Rome, Damascus, Tokyo, New Orleans. (7) Warm and dry: Cairo, Algiers, Kimberley. (8) Warm and very dry: Mexico, Teheran. (9) Cool (temperature 33° to 57°) and very damp: Greenwich, Cochabambo. (10) Cool and moderately damp: Vienna, Melbourne, Toronto, Chicago. (11) Cool and dry: Tashkent, Simla, Cheyenne. (12) Cool and very dry: Yarkand, Denver. (13) Cold (temperature 32° or less) and very damp: Ben Nevis, Sagastyr, Godthaab. (14) Cold and moderately damp: Tomsk, Pike's Peak, Polaris House. (15) Cold and dry. (16) Cold and very dry: Pamirs.

The actual mean temperature of the Earth amounted, according to his computation, to 57° F., and this isotherm, which separated types 8 and 9, also divided De Candolle's "Mikrothermes" from the plants requiring a greater amount of warmth.

Mr. Vaughan Cornish described his recent observations on snow ripples with beautiful photographic illustrations, and Prof. J. Milne gave an account of the large earthquakes recorded in 1899. Mr. R. T. Günther described the peculiar character of the coast of the Phlegræan Fields near Naples, and showed that by observations of the numerous submerged buildings of that district it might be possible to determine the date and duration of the fluctuations of the land and sea level during the last twenty centuries. The Association subsequently voted a money grant to assist him in carrying out the researches which he had suggested.

Dr. H. R. Mill exhibited and described the new insulating water-bottle designed by Profs. Pettersson and Nansen, and made by Messrs. Ericsson, for obtaining water-samples from any desired depth and bringing them up without change of temperature. The new apparatus was tested by Prof. Nansen last August on board the *Michael Sars* in the North Atlantic, and found to be completely satisfactory.

Dr. Mill also read a paper on the treatment of regional geography, in which he laid down the general principle that the fixed conditions of the land surface had first to be described, and then the mobile distributions, which were modified by the fixed forms. As an example, he dwelt at some length on the configuration of a section of the South Downs and the effect of this configuration in determining the distribution of rainfall in the district, a problem which he hoped to treat in greater detail at a future date.

Mr. J. E. Marr described the typical land form known as a moel, with special reference to the forms it assumed when dissected by sub-aërial erosion.

Two educational papers of much interest were read. One by Mr. T. G. Rooper dealt with the progress made in teaching of geography in the elementary schools of the West Riding since 1883. He illustrated it by the exhibition of a series of remarkable relief models on different scales produced by school teachers and used by them in their regular work. Some of these were of typical features, such as the Red Tarn, to typify a mountain lake, others of the actual school district taken from the Ordnance map, and others, on a small scale, of large parts of the country. The second paper was by Mr. E. R. Wethey, who gave a demonstration of his method of teaching commercial geography by the use of lantern maps, diagrams and pictures, a large number of which, in novel and striking forms, he showed upon the screen.

Educational questions have always occupied a considerable share of the time of Section E, and the committee very cordially supported the proposal to recommend the Council of the Association to form a new Section for the discussion of education in a more complete and technical manner than could be secured in a gathering of votaries of one isolated branch of science.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—Mr. E. S. Goodrich has been elected to a fellowship in natural science at Merton College.

CAMBRIDGE.—In his annual address to the Senate at the opening of the term, the Vice-Chancellor announced that the Benefactor Fund amounted to 55,000*l.*, and that the Squire Trustees had agreed to contribute 15,000*l.* towards the erection of the Law School. The plans for the Botanical and Medical Departments have been approved, and building will shortly commence; but fresh benefactions are still needed to meet the urgent demands for further accommodation.

The new Department of Agriculture, under the able guidance of Prof. Somerville, is now well started. The funds at its disposal have enabled it to secure an efficient staff, and it is provided with an excellent experimental farm. The University has sought to encourage the study by establishing a special amination in agricultural science for the B.A. degree.

Dr. L. Humphry has been appointed assessor to the Regius Professor of Physic; Sir G. G. Stokes and Prof. Darwin electors to the Isaac Newton Studentship in Physical Astronomy; and Dr. Tatham an examiner for the diploma in Public Health. Mr. Leathem (St. John's) and Mr. Grace (Peterhouse) have been appointed moderators, and Mr. Whitehead (Trinity) an examiner, for the Mathematical Tripos.

Rooms for work in clinical pathology, bacteriology, &c., have just been erected by the staff and presented as a gift to Addenbrooke's Hospital. They will be open for work, under the direction of Prof. Sims Woodhead, during the present term.

At Emmanuel College a research studentship of 100*l.* has been awarded to Mr. J. Mellanby. Grants have been made from the studentship fund of 60*l.* to Mr. G. F. Abbott, and of 40*l.* to Mr. D. G. Hall. At Queen's College the Rev. C. H. W. Johns has been elected to the office of lecturer in Assyriology.

MR. C. R. P. ANDREWS, of St. John's Training College, Battersea, has been appointed first principal of the new Government training college to be opened at Perth, Western Australia.

DR. SAMSON GEMMELL, of Anderson's College, Glasgow, has been appointed professor of clinical medicine in the University of Glasgow, in succession to Prof. McCall Anderson.

DR. CULLIS, professor of mathematics at the Hartley College, Southampton, has been appointed professor of mathematics at the Presidency College, Calcutta.

MR. J. F. HUDSON, late lecturer in mathematics at Jesus College, Oxford, has been appointed professor of mathematics at the Hartley College, Southampton.

MR. J. STUART THOMSON, formerly demonstrator of zoology at the School of Medicine of the Royal Colleges, Edinburgh, has been appointed lecturer in botany and zoology at the Municipal Science, Art and Technical Schools, Plymouth.

THE School of Engineering of Columbia University, New York, announces a new course of study dealing with the construction of automobiles, self-propelling road engines and railway cars.

PROF. GOSS has been made dean of the Engineering Schools of Purdue University, Lafayette, Ind., and Prof. L. C. Glen, of South Carolina College, has been appointed to the chair of geology in Vanderbilt University.

MR. PERCY H. FOULKES has been elected first principal of the Harper Adams College, Newport, Salop. He will enter

upon his duties on January 1, 1901, soon after which date the college will, it is expected, be ready to receive pupils.

AT a general meeting of Convocation of the University of London, held on Tuesday last, the following were elected to serve as members of the Senate under Section 12 of the statute of the reconstructed University:—Mr. John Fletcher Moulton, Dr. J. D. McClure, Sir A. Kaye Rollit, Dr. T. B. Napier, Dr. J. B. Benson, Dr. T. L. Mears, Sir H. H. Cozens-Hardy, Dr. T. Barlow, Mr. J. F. Payne, Sir Philip Magnus, Dr. S. Bryant, Dr. C. W. Kimmins, Dr. F. Clowes, Prof. Silvanus Thompson, Dr. F. S. Macaulay, and Mr. J. W. Sidebotham.

DURING the past week very many addresses have been delivered to students at the opening of the winter sessions of the various science, technical and medical schools in London and the provinces, in the course of which much excellent advice has been given. An article dealing with some of the utterances made to medical students is to be found in another part of the present issue. In this column we refer, and only very briefly, to two addresses given to students of other branches of knowledge, viz. those by Sir Alexander Binnie at the opening of the Central Technical College, on October 2, and by Prof. Le Neve Foster at the distribution of medals, prizes, &c., to the students of the Royal College of Science, on October 4. The subjects chosen for their addresses by both speakers were well suited to the occasion, and should prove of much service to the audiences who listened to them. Prof. Foster took as his topic "Common Sense," in the course of which he referred to the remark of Prof. Huxley that science was organised common sense, and the two or three years' training in science which students received at the college was, therefore, simply training in ordinary common sense. If they wished to succeed in any calling they must exercise the faculty of thought. It was difficult to realise that times were changing, but change was everywhere taking place, and they must throw aside the idea that in the production of British manufactures the methods that had come down to them from their forefathers were necessarily the best. In Lancashire it was said that what Lancashire did to-day Great Britain would do to-morrow. They might say that what the scientific man did to-day the manufacturing man would do to-morrow. The laboratory experiment of to-day was, in fact, the manufacturing process of to-morrow. But if the student desired to take an active part in the improvement of the industrial life of the country and of manufacturing processes, he must work hard and not place too much reliance on his teacher. All that the professor could do was to give the student a general ground-work upon which afterwards by his own experiments he could build up his frame-work of knowledge. Sir A. Binnie in his address contrasted the advantages which students of to-day have over those educated in the middle of the present century, and urged upon his hearers not to confine themselves merely to the curriculum of study laid before them, or to take too narrow a view or devote themselves exclusively to one particular branch of learning. The aim of the speaker was to impress upon his audience that to be a true student of science the mind must be opened out and widely cultivated by observation to grasp every detail, as it often occurs that it is among the almost unnoticed minutiæ of a particular science that those wonderful correlations that lead in the future to wide results are to be found. He spoke of the necessity of acquiring a wide and broad view of the subjects which should engage the student's attention for the reason that he felt that education could only be complete when studied as a whole, and the beauty of all the different sciences brought clearly before the mind. Further, one can never tell, when entering upon active work, into what avenues or by-paths of practice he may be led, and to illustrate this Sir A. Binnie referred to his own experience. He also urged upon his hearers to study the history of their profession, and of the various discoveries which have been made in the different branches of science to which they would apply themselves. Altogether the students are to be congratulated upon the helpful advice tendered to them.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 1.—M. Maurice Lévy in the chair.—On the absorption of free oxygen by normal urine, by M. Berthelot. Normal urine absorbs free oxygen in amounts larger than those corresponding to the solubility of oxygen in water. The acidity is not altered by the absorption.—Remarks on the acidity of urine, by M. Berthelot.—On the distribution of the horizontal component of the earth's magnetism in France, by M. E. Mathias. As the result of work spread over a period of six years in the neighbourhood of Toulouse, it was found that a very simple formula would combine the results of all the observations, namely: $\Delta H = -1'26\ (\Delta \text{ long.}) - 7'42\ (\Delta \text{ lat.})$, in which ΔH was the difference between the measurement for an element at a place X and that of the corresponding element at Toulouse. It was further found that the above formula applies to the whole of France.—On the selenides of nickel, by M. Fonzes-Diacon. Nickel leaflets heated in a current of nitrogen carrying small quantities of selenium vapour give cubical crystals of a selenide of the composition NiSe. Another selenide approximating in composition to Ni_3S_4 is obtained by heating anhydrous nickel chloride in a current of hydrogen selenide at a dull red heat. At 300° C. the diselenide NiS_2 is obtained as a greyish-black, friable mass. All these products heated to a white heat in a current of hydrogen give a sub-selenide, Ni_2Se.—Oxycelluloses from cotton, flax and hemp, by M. Leo Vignon. Purified fibres of various textile material were submitted to the oxidising action of hydrochloric acid and potassium chlorate; the yield in all cases was the same, about 70 per cent.; phenylhydrazine furnished the same osazone. Small differences were observed in the reducing powers of the oxycelluloses from different sources.—On the mutability of *Œnothera Lamarckiana*, by M. Hugo de Vries. This furnishes an example of the rare phenomenon of a state of mutability in a pure species. The new species appears suddenly without preliminary or intermediate stages; the transformed individual shows all the characters of a new type, although the parents and grandparents are absolutely normal. The seeds of the transformed individuals give rise to the new type only, no tendency being observed to revert to the characters of *Œ. Lamarckiana*.—On the Eocene of Tunis and Algiers, by M. L. Pervinquiere.—The ravine of Chevalleyres and the retrogression of torrents, by M. Stanislas Meunier. Attention is drawn to the mode of formation of this *col*, the size of which would appear out of all proportion to the small stream to which the ravine is undoubtedly due. The transfer of rock masses, and other effects usually ascribed to glacier action, may be traced to this torrent.—Observations of a meteor which fell on the evening of September 24, by M. Jean Mascart. The meteor, the nucleus of which was star-like and very bright, was seen at 10.16 p.m. on September 24 between Meudon and Bellevue.

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